

PCT1C

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RAW SEQUENCE LISTING DATE: 03/13/2002 PATENT APPLICATION: US/10/069,908 TIME: 13:54:43

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      5 <120> TITLE OF INVENTION: Maltogenic Amylase-modified Starch Derivatives
     7 <130> FILE REFERENCE: 6001.204-US
     9 <140> CURRENT APPLICATION NUMBER: US/10/069,908
C--> 9 <141> CURRENT FILING DATE: 2002-02-28
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85	ASII	111	кэр	кър	180	TYT	GIU	нта	GIII	185	пåг	ASII	Pne	THE	_	PIO	
	~~~	~~+	++-	+ ~~		~~~	~~+	++	+			+			190		700
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	Ald	сту	Pne	Ser	ьeu	Ата	Asp	Leu		GIN	GIU	ASN	GLY		тте	Ala	
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PATENT APPLICATION: US/10/069,908

DATE: 03/13/2002 TIME: 13:54:44

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231   Ile   Asp   Arg   Phe   Tyr   Asp   Gly   Asp   Thr   Thr   Asn   Asn   Asn   Pro   Ala   Ly   232   20			Ser	Ser	Ser	Ala	Ser	Val	Lys	Gly	Asp		Ile	Tyr	Gln	Ile		
232       20       25       30         235       Ser Tyr Gly Leu Tyr Asp Pro Thr Lys Ser Lys Trp Lys Met Tyr Tr 236       35       40       45         239       Gly Gly Asp Leu Glu Gly Val Arg Gln Lys Leu Pro Tyr Leu Lys Gl 240       50       55       60         243       Leu Gly Val Thr Thr Ile Trp Leu Ser Pro Val Leu Asp Asn Leu Asp 244       65       70       75         247       Thr Leu Ala Gly Thr Asp			_				5										15	
235 Ser Tyr Gly Leu Tyr Asp Pro Thr Lys Ser Lys Trp Lys Met Tyr Tr 236	231	Ile	Asp	Arg	Phe	${ t Tyr}$	Asp	Gly	Asp	Thr	Thr	Asn	Asn	Asn	Pro	Ala	Lys	
236	.232					20					25					30		
239         Gly         Gly         Asp         Leu         Glu         Gly         Val         Arg         Gln         Lys         Leu         Pro         Tyr         Leu         Lys         Gl           243         Leu         Gly         Val         Thr         Thr         Thr         Ile         Trp         Leu         Ser         Pro         Val         Leu         Asp         Asp         Leu         Asp         Asp         Trp	235	Ser	Tyr	Gly	Leu	Tyr	Asp	Pro	Thr	Lys	Ser	Lys	Trp	Lys	Met	Tyr	Trp	
240       50       55       60         243       Leu Gly Val Thr Thr Thr Thr Ile Trp Leu Ser Pro Val Leu Asp Asn Leu Asp 244       65       70       75         247       Thr Leu Ala Gly Thr Asp Asn Thr Gly Tyr His Gly Tyr Trp Thr Ar 248       80       85       90       95         251       Asp Phe Lys Gln Ile Glu Glu His Phe Gly Asn Trp Thr Thr Phe As 252       100       105       110       110         255       Thr Leu Val Asn Asp Ala His Gln Asn Gly Ile Lys Val Ile Val As 256       115       120       125       125         259       Phe Val Pro Asn His Ser Thr Pro Phe Lys Ala Asn Asp Ser Thr Phe 260       130       135       140       140         263       Ala Glu Gly Gly Ala Leu Tyr Asn Asn Gly Thr Tyr Met Gly Asn Ty 155       155       155       155         267       Phe Asp Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se 166       165       170       17         271       Asn Trp Asp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 180       185       190																		
243       Leu       Gly       Val       Thr       Thr       Ile       Trp       Leu       Ser       Pro       Val       Leu       Asp       Asn       Thr       Gly       Tyr       His       Gly       Tyr       Trp       Thr       Ar       Asp       Asn       Thr       Gly       Tyr       His       Gly       Tyr       Tyr       Thr       Thr       Ar	239	Gly	Gly	Asp	Leu	Glu	Gly	Val	Arg	Gln	Lys	Leu	Pro	Tyr	Leu	Lys	Gln	
244       65       70       75         247 Thr Leu Ala Gly Thr Asp Asn Thr Gly Tyr His Gly Tyr Trp Thr Ar 248 80       85       90       95         251 Asp Phe Lys Gln Ile Glu Glu His Phe Gly Asn Trp Thr Thr Phe As 100       105       110       110         255 Thr Leu Val Asn Asp Ala His Gln Asn Gly Ile Lys Val Ile Val As 115       120       125         259 Phe Val Pro Asn His Ser Thr Pro Phe Lys Ala Asn Asp Ser Thr Phe 260       130       135       140         263 Ala Glu Gly Gly Ala Leu Tyr Asn Asn Gly Thr Tyr Met Gly Asn Ty 145       150       155         267 Phe Asp Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se 160       165       170       17         271 Asn Trp Asp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 180       185       190	240			50					55					60				
247 Thr Leu Ala Gly Thr Asp Asn Thr Gly Tyr His Gly Tyr Trp Thr Ar         248 80       85       90       95         251 Asp Phe Lys Gln Ile Glu Glu His Phe Gly Asn Trp Thr Thr Phe As       100       105       110         255 Thr Leu Val Asn Asp Ala His Gln Asn Gly Ile Lys Val Ile Val As       125       125         259 Phe Val Pro Asn His Ser Thr Pro Phe Lys Ala Asn Asp Ser Thr Phe       130       135       140         263 Ala Glu Gly Gly Ala Leu Tyr Asn Asn Gly Thr Tyr Met Gly Asn Ty       155       155         267 Phe Asp Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se       165       170       17         271 Asn Trp Asp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr       185       190	243	Leu	Gly	Val	Thr	Thr	Ile	Trp	Leu	Ser	Pro	Val	Leu	Asp	Asn	Leu	Asp	
248       80       85       90       95       95         251       Asp       Phe       Lys       Gln       Ile       Glu       Glu       His       Phe       Gly       Asn       Trp       Thr       Thr       Phe       As         252       100       100       105       105       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       112       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110 <td>244</td> <td></td> <td>65</td> <td></td> <td></td> <td></td> <td></td> <td>70</td> <td></td> <td></td> <td></td> <td></td> <td>75</td> <td></td> <td></td> <td></td> <td></td> <td></td>	244		65					70					75					
248       80       85       90       95       95         251       Asp       Phe       Lys       Gln       Ile       Glu       Glu       His       Phe       Gly       Asn       Trp       Thr       Thr       Phe       As         252       100       100       105       105       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       112       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110       110 <td>247</td> <td>Thr</td> <td>Leu</td> <td>Ala</td> <td>Gly</td> <td>Thr</td> <td>Asp</td> <td>Asn</td> <td>Thr</td> <td>Gly</td> <td>Tyr</td> <td>His</td> <td>Gly</td> <td>Tyr</td> <td>Trp</td> <td>Thr</td> <td>Arg</td> <td></td>	247	Thr	Leu	Ala	Gly	Thr	Asp	Asn	Thr	Gly	Tyr	His	Gly	Tyr	Trp	Thr	Arg	
251 Asp Phe Lys Gln Ile Glu Glu His Phe Gly Asn Trp Thr Thr Phe Ass 252					-					-	-		_	_	_		95	
252			Phe	Lvs	Gln	Ile	Glu	Glu	His	Phe	Glv	Asn	Trp	Thr	Thr	Phe	Asp	
255 Thr Leu Val Asn Asp Ala His Gln Asn Gly Ile Lys Val Ile Val Asp 256				-1-					••		_							
256		Thr	Leu	Val	Asn		Δla	His	Gln	Asn		Tle	Lvs	Val	Tle		Asp	
259 Phe Val Pro Asn His Ser Thr Pro Phe Lys Ala Asn Asp Ser Thr Phe 260				***					V		- I							
260 130 135 140  263 Ala Glu Gly Gly Ala Leu Tyr Asn Asn Gly Thr Tyr Met Gly Asn Ty 264 145 150 150 155  267 Phe Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se 268 160 165 170 170  271 Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 272 180 180 185 190		Dho	Wa 1	Dro		Hic	Sar	Thr	Dro		Larc	λla	λen	Acn		Thr	Dhe	
263 Ala Glu Gly Gly Ala Leu Tyr Asn Asn Gly Thr Tyr Met Gly Asn Ty 264 145 150 155 267 Phe Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se 268 160 165 170 17 271 Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 272 180 185 190			Val		ASII	1112	DCI	1111		LIIC	шур	niu	ASII		DCI	T 114	1110	
264       145       150       155         267       Phe Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se         268       160       165       170       17         271       Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr       272       180       185       190			C1.11		~1.r	71-	T 011	m,,,,,,		A cn	C1+7	Пhr	Патъ		C1 17	λcn	Tr.	
267 Phe Asp Asp Ala Thr Lys Gly Tyr Phe His His Asn Gly Asp Ile Se         268 160       165       170       17         271 Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr         272       180       185       190				GTĀ	GTÅ	ura	ne u	_	HOII	นจแ	GTÄ	TIIT		ric L	Gry	ഹാവ	-11-	
268 160 165 170 17 271 Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 272 180 185 190				3	R7 -	m1	T		M	nh -	ш; -	ui ~		C1	7 ~~	T1 ~	Cor	
271 Asn Trp Asp Asp Arg Tyr Glu Ala Gln Trp Lys Asn Phe Thr Asp Pr 272 180 185 190			ASP	ASP	ата	ınr		стА	TAL	rne	птѕ		ASN	стА	ASP	тте		
272 180 185 190			_	_	_					<b>~</b> ?				701	m)		175	
		Asn	Trp	Asp	Asp	-	Tyr	GLu	Ala	GIn	-	гля	Asn	Pne	Thr		Pro	
- 7/5 Ala Cly Dhe Ser Teu Ala Ach Teu Ser Cln Clu Ach Cly Thr Tle Al					_			_	_	_			_					
		Ala	Gly	Phe		Leu	Ala	Asp	Leu		Gln	Glu	Asn	GLY		Ile	Ala	
276 195 200 205	276				195					200					205			

RAW SEQUENCE LISTING DATE: 03/13/2002 PATENT APPLICATION: US/10/069,908 TIME: 13:54:44

Input Set : A:\sequence.ST25.txt

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279	Gln	Tyr	Leu	Thr	Asp	Ala	Ala	Val	Gln	Leu	Val	Ala	His	Gly	Ala	Asp
280		•	210		-			215					220	-		•
283	Gly	Leu	Arg	Ile	Asp	Ala	Val	Lys	His	Phe	Asn	Ser	Gly	Phe	Ser	Lys
284	_	225	_		_		230	_				235	_			-
287	Ser	Leu	Ala	Asp	Lys	Leu	Tyr	Gln	Lys	Lys	Asp	Ile	Phe	Leu	Val	Gly
	240			_	-	245	-		-	_	250					255
291	Glu	Trp	Tyr	Gly	Asp	Asp	Pro	Gly	Thr	Ala	Asn	His	Leu	Glu	Lys	Val
292		-	-	-	260	-		-		265					270	
295	Arg	Tyr	Ala	Asn	Asn	Ser	Gly	Val	Asn	Val	Leu	Asp	Phe	Asp	Leu	Asn
296	_	_		275			_		280			-		285		
299	Thr	Val	Ile	Arg	Asn	Val	Phe	Gly	Thr	Phe	Thr	Gln	Thr	Met	Tyr	Asp
300			290					295					300		_	_
303	Leu	Asn	Asn	Met	Val	Asn	Gln	Thr	Gly	Asn	Glu	Tyr	Lys	Tyr	Lys	Glu
304		305					310		_			315	_	_	_	
307	Asn	Leu	Ile	Thr	Phe	Ile	Asp	Asn	His	Asp	Met	Ser	Arg	Phe	Leu	Ser
	320					325					330					335
311	Val	Asn	Ser	Asn	Lys	Ala	Asn	Leu	His	Gln	Ala	Leu	Ala.	Phe	Ile	Leu
312					340					345					350	
315	Thr	Ser	Arg	Gly	Thr	Pro	Ser	Ile	Tyr	Tyr	Gly	Thr	Glu	Gln	Tyr	Met
316			_	355					360					365	_	
319	Ala	Gly	Gly	Asn	Asp	Pro	Tyr	Asn	Arg	Gly	Met	Met	Pro	Ala	Phe	Asp
320			370					375					380			
323	Thr	Thr	Thr	Thr	Ala	Phe	Lys	Glu	Val	Ser	Thr	Leu	Ala	Gly	Leu	Arg
324		385					390					395				
327	Arg	Asn	Asn	Ala	Ala	Ile	Gln	Tyr	Gly	Thr	Thr	Thr	Gln	Arg	Trp	Ile
328	400					405					410					415
<b>′</b> 331	Asn	Asn	Asp	Val	Tyr	Ile	Tyr	Glu	Arg	Lys	Phe	Phe	Asn	Asp	Val	Val
332					420					425					430	
	Leu	Val	Ala	Ile	Asn	Arg	Asn	${ t Thr}$	Gln	Ser	Ser	Tyr	Ser	Ile	Ser	Gly
336				435					440					445		
339	Leu	Gln	Thr	Ala	Leu	Pro	Asn		Ser	$\mathtt{Tyr}$	Ala	Asp	Tyr	Leu	Ser	Gly
340			450					455					460			
343	Leu	Leu	Gly	Gly	Asn	Gly		Ser	Val	Ser	Asn	Gly	Ser	Val	Ala	Ser
344		465					470					475				
		Thr	Leu	Ala	Pro		Ala	Val	Ser	Val		Gln	$\mathtt{Tyr}$	Ser	Thr	
	480				_	485				_	490					495
	Ala	Ser	Ala	Pro		Ile	Gly	Ser	Val		Pro	Asn	Met	Gly		Pro
352					500					505				_	510	_
	Gly	Asn	Val		Thr	Ile	Asp	Gly	_	Gly	Phe	Gly	Thr	Thr	Gln	Gly
356		.0.2	_	515		0			520		0_			525		
	Thr	Val		Phe	Gly	Gly	Val		Ala	Thr	Val	Lys		Trp	Thr	Ser
360	_	_	530	_,		_		535	_				540			
	Asn		lle	Glu	val	Tyr		Pro	Asn	Met	Ala		Gly	Leu	Thr	Asp
364	**- *	545		m1		<b>a</b> 1	550				_	555	_	_	_	_
		ьys	val	Thr	Ala		GLY	val	ser			Leu	Tyr	Ser	Tyr	
368		<b>.</b>	<b>C</b>	<b>~1</b>	m le	565	m1.	<b>a</b> .	77- 7		570	m)		<b>.</b>	<b>a</b> .	575
	тте	ьeu	ser	етА		GIN	rnr	ser	val		rne	rnr	vaı	Lys		Ата
372	D	D	መኑ	7	580	C1	<b>3</b>	T	<b>-</b> 1 -	585	T	m1:	<b>a</b> 1	3	590 Tla	D
3/5	PIO	PIO	TUL	Asn	ьeu	етА	Asp	гла	тте	Tyr	ьeu	rnr	GTÄ	Asn	TIE	Pro

VERIFICATION SUMMARY

PATENT APPLICATION: US/10/069,908

DATE: 03/13/2002 TIME: 13:54:45

Input Set : A:\sequence.ST25.txt

Output Set: N:\CRF3\03132002\J069908.raw

 $L:9\ M:270\ C:$  Current Application Number differs, Replaced Current Application No

L:9 M:271 C: Current Filing Date differs, Replaced Current Filing Date